

## REMARKS

Applicants have received the Office action dated August 30, 2006, in which the Examiner: 1) objected to claim 2 for an alleged informality; 2) rejected claims 2-6, 40 and 59 for alleged Section 112 shortcomings; 3) rejected claims 1, 32 and 56 as allegedly obvious over Hammond (U.S. Pat. No. 3,826,931); 4) rejected claims 34-36, 38, 40-42 56-57 and 59-61 as allegedly obvious over Hammond and Vig (U.S. Army publication AD-A328861); and 5) rejected claims 38 and 39 as allegedly obvious over Hammond and Gunawardana (U.S. Pat. Appl. Pub. No. 20020125966).

With this Response, Applicants amend claims 2-3, 32, 40-42, 56 and 59-60, cancel claim 61, and present new claims 63-66. Reconsideration is respectfully requested.

### I. CLAIM OBJECTION

With this Response, Applicants amend claim 2, thus mooted the objection.

### II. SECTION 112 REJECTIONS

The Office action rejects claims 2-6 under Section 112 alleging, "The specification/drawings does not support having both limitations – 'a temperature calculation circuit' and 'a mixer'." Applicants respectfully traverse. Firstly, the "temperature calculation circuit" has been amended to be a "temperature correction circuit" to address the claim objection. Next, the temperature correction circuit 39 of Figure 3 is shown to have an error detector 40. The error detector 40 may take many forms, such as shown in Figures 5A-5C, with Figure 5B having a mixer. Thus, there is no inconsistency in having a temperature correction circuit that includes a mixer.

Applicants rewrite claims 40 and 59 into independent form, with amendments, to address the Section 112 rejections.

### III. ART-BASED REJECTIONS

#### A. Claim 1

Claim 1 stands rejected as allegedly obvious over Hammond. Applicants amend claim 1 to broaden the claimed relationships between frequency response of the crystals, and not to define over the cited art.

Hammond is directed to a dual crystal resonator apparatus. (Hammond Title). In particular, Hammond discloses the algebraic combination of two frequencies to yield an output having a zero temperature coefficient of frequency. (Hammond Abstract). As noted in the Office action, Hammond does not expressly disclose a spectrum analyzer. (Office action of August 30, 2006, Page 3, third full paragraph).

Claim 1, by contrast, specifically recites, "a spectrum analyzer coupled to the mixer, wherein the spectrum analyzer provides a spectral analysis of the difference signal." Applicants respectfully submit that Hammond does not teach or fairly suggest such a system. The Office action admits that Hammond fails to teach a spectrum analyzer, and for that reason alone the rejection should be withdrawn. Moreover, Hammond fails to teach, suggest or even imply that a spectrum analyzer could or should be used on a difference signal. Thus, Hammond does not teach or suggest **"the spectrum analyzer provides a spectral analysis of the difference signal."**

Based on the foregoing, Applicants respectfully submit that claim 1, and all claims which depend from claim 1 (claims 2-6), should be allowed. Applicants amend claims 2 and 3 to address the other than art-based rejections.

#### **B. Claim 32**

Claim 32 stands rejected as allegedly obvious over Hammond. Applicants amend claim 32 to put the claim in better form and to remove limitations not needed to define over the cited art. These amendments are thus not to define over Hammond.

Claim 32 specifically recites, "analyzing, spectrally, the difference signal." Applicants respectfully submit that Hammond does not teach or fairly suggest such a system. The Office action admits that Hammond fails to teach a spectrum analyzer, and for that reason alone the rejection should be withdrawn. Moreover, the Hammond fails to teach, suggest or even imply that a spectrum analyzer could or should be used on a difference signal. Thus, Hammond does not teach or suggest "analyzing, spectrally, the difference signal."

Based on the foregoing, Applicants respectfully submit that claim 32, and all claims which depend from claim 32 (claims 34-36 and 38-39), should be allowed.

**C. Claim 40**

Claim 40 stands rejected as allegedly obvious over Hammond and Vig. Applicants amend claim 40 to be in independent form, and to remove limitations previously found in the claim to which claim 40 previously depended. Thus, the limitations were already present by virtue of the previous dependency.

Hammond is directed to a dual crystal resonator apparatus. (Hammond Title). In particular, Hammond discloses the algebraic combination of two frequencies to yield an output having a zero temperature coefficient of frequency. (Hammond Abstract). Slide 2-20 of Vig appears to show a method where the two frequencies from a single crystal, dual-mode oscillator are mixed and applied to a counter.

Claim 40, by contrast, specifically recites, "determining a temperature of the first and second crystals based on a relationship between a frequency behavior of the second crystal with respect to temperature, the determining by: **maintaining a first count value** proportional to the first signal's frequency; **maintaining a second count value** proportional to the second signal's frequency; **calculating a ratio** of the first and second count value, wherein the ratio of the first and second count values is proportional to the temperature of the crystals." Hammond and Vig fail to teach or suggest such a system. Vig slide 2-20 teaches single counter, and fails to teach, suggest or even imply a ratio. Thus Hammond and Vig fail to teach or suggest "**maintaining a first count value** proportional to the first signal's frequency; **maintaining a second count value** proportional to the second signal's frequency; **calculating a ratio** of the first and second count value."

Based on the foregoing, Applicants respectfully submit that claim 40 should be allowed.

**D. Claim 41**

Claim 41 stands rejected as allegedly obvious over Hammond and Vig. Applicants amend claim 41 to be in independent form, and to remove limitations previously found in the claim to which claim 41 previously depended. Thus, the limitations were already present by virtue of the previous dependency. Moreover, Applicants broaden claim regarding how the count values are changed, as these limitations are not needed to define over Hammond and Vig.

Claim 41 specifically recites, "maintaining a count value with a single counter; **modifying the count value in a first direction** proportional to the first signal's frequency; **modifying the count value in a second direction** proportional to the second signal's frequency; and wherein the net count value is proportional to the temperature of the crystals." Hammond and Vig fail to teach or suggest such a system. While Vig slide 2-20 teaches single counter, Hammond and Vig fail to teach, suggest or even imply "**modifying the count value in a first direction** proportional to the first signal's frequency; **modifying the count value in a second direction** proportional to the second signal's frequency."

Based on the foregoing, Applicants respectfully submit that claim 41, and claim 42 which depends from claim 41, should be allowed. Applicants amend claim 42 to further narrow the broadened modifying limitations of claim 41.

**E. Claim 56**

Claim 56 stands rejected as both allegedly obvious over Hammond alone, and allegedly obvious over Hammond and Vig. The rejection over Hammond and Vig appears to be in error, as claim 56 does not require storage devices or counters as recited in the rejection. Applicants amend claim 56 to put the claim in better form, and not to define over any cited art.

Claim 56 recites, "analyzing, spectrally, the difference signal." Applicants respectfully submit that Hammond does not teach or fairly suggest such a system. The Office action admits that Hammond fails to teach a spectrum analyzer, and for that reason alone the rejection should be withdrawn. Moreover, the Hammond fails to teach, suggest or even imply that a spectrum analyzer

could or should be used on a difference signal. Thus, Hammond does not teach or suggest "analyzing, spectrally, the difference signal."

Based on the foregoing, Applicants respectfully submit that claim 56, and claim 57 which depends from claim 56, should be allowed.

**F. Claim 59**

Claim 59 stands rejected as allegedly obvious over Hammond and Vig. Applicants amend claim 59 to be in independent form, and to remove limitations previously found in the claim to which claim 59 previously depended. Thus, the limitations were already present by virtue of the previous dependency. Moreover, Applicants correct antecedent basis shortcomings, and not to define over any cited art.

Hammond is directed to a dual crystal resonator apparatus. (Hammond Title). In particular, Hammond discloses the algebraic combination of two frequencies to yield an output having a zero temperature coefficient of frequency. (Hammond Abstract). Slide 2-20 of Vig appears to show a method where the two frequencies from a single crystal, dual-mode oscillator are mixed and applied to a counter.

Claim 59, by contrast, specifically recites, "maintaining a first count value proportional to the first signal's frequency; maintaining a second count value proportional to the second signal's frequency; calculating a ratio of the first and second count value, wherein the ratio of the first and second count values is proportional to the temperature of the crystals." Hammond and Vig fail to teach or suggest such a system. Vig slide 2-20 clearly teaches single counter, and fails to teach, suggest or even imply a ratio. Thus Hammond and Vig fail to teach or suggest "maintaining a first count value proportional to the first signal's frequency; maintaining a second count value proportional to the second signal's frequency; calculating a ratio of the first and second count value."

Based on the foregoing, Applicants respectfully submit that claim 59 should be allowed.

**G. Claim 60**

Claim 60 stands rejected as allegedly obvious over Hammond and Vig. Applicants broaden claim regarding how the count values are changed, as these limitations are not needed to define over Hammond and Vig.

Claim 60 specifically recites, "maintaining a count value with a single counter; **modifying the count value in a first direction** proportional to the first signal's frequency; **modifying the count value in a second direction** proportional to the second signal's frequency; and wherein the net count value is proportional to the temperature of the crystals." Hammond and Vig fail to teach or suggest such a system. While Vig slide 2-20 teaches single counter, Hammond and Vig fail to teach, suggest or even imply "**modifying the count value in a first direction** proportional to the first signal's frequency; **modifying the count value in a second direction** proportional to the second signal's frequency."

Based on the foregoing, Applicants respectfully submit that claim 60 should be allowed.

**IV. NEW CLAIMS**

With this Response, Applicants present new claims 63-66. Applicants respectfully submit that no new matter is added by these claims, that the cited art does not teach or suggest these claims, and that these claims are allowable for the same reasons as the claims from which they depend as well as the additional limitations therein.

**V. CLAIM CANCELLATIONS**

With this Response, Applicants cancel claim 61 given that the amendment to claim 60 broadens claim 60 to cover the limitations of now-cancelled claim 61. The cancellation is nevertheless without prejudice to later asserting the claim, such as in a continuation application.

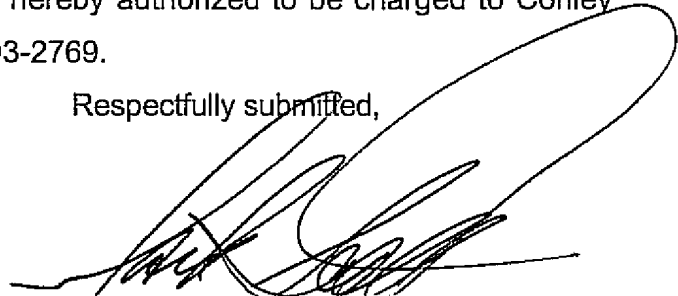
**VI. CONCLUSION**

In the course of the foregoing discussions, Applicants may have at times referred to claim elements in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other elements can be ignored or dismissed. The claims must be viewed as a

whole, and each element of the claims must be considered when determining the patentability of the claims.

Applicants respectfully request reconsideration and that a timely Notice of Allowance be issued in this case. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Conley Rose, P.C.'s Deposit Account No. 03-2769.

Respectfully submitted,

A large, stylized handwritten signature in black ink, likely belonging to Mark E. Scott, is written over a horizontal line.

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